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| 10/631,846      | 08/01/2003  | Alexander Stankowski | 033275-406          | 1044             |

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| EXAMINER |
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JOLLEY, KIRSTEN

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 08/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/631,846

Applicant(s)

STANKOWSKI ET AL.

Examiner

Kirsten C Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/1/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities:

Paragraph [0001] of the specification refers to claim 1. It is improper U.S. practice to refer to the claims in the specification.

In paragraph [0043] of the specification, the Examiner requests that Applicant spell out the acronym "CNC" upon its first use.

Appropriate correction is required.

### ***Claim Objections***

2. Claims 12, 16, and 22-23 are objected to because of the following informalities:

In claim 12, line 3, it appears that "thickened" should be --thickening--.

In claim 22, line 4, it appears that the word "the" should be deleted.

In claim 23, line 3, the Examiner requests that the acronym "CNC" is spelled out upon its first use in the claims.

It is noted that claim 16 requires that the fillers include metal or oxide material or mixture thereof, *and* organic materials. It is noted that the specification teaches that organic materials are *optional* fillers in paragraph [0031].

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 11-12, 16, and 24-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Fernihough et al. (US 6,265,022).

Fernihough et al. discloses a method of protecting the cooling holes of a gas turbine component from the effects of thermochemical or mechanical processes carried out on the surface of the component, comprising the steps of: applying a masking material (plug material) to the cooling holes, the plug material containing at least one filler material (col. 5, lines 48-63); at least partially thickening the masking material by heating so as to volatilize the organic portion of the plug material; carrying out the removal process by chemical etching after the plugs are in place (col. 6, lines 45-50); and removing the masking material/plugs from the cooling holes of the component. (It is also noted that, in rejecting claim 1, the thermochemical or physical removal process may also be considered the step of removing mask material 6a after the plugs are in place.)

It is known that the plug material is applied and thickened from the outside of the component surface because Fernihough et al. teaches that an insert may be placed on the internal surface (col. 6, lines 31-36).

As to claims 16 and 24-27, Fernihough et al. teaches that the fillers in the plug material may include the materials claimed (col. 5, lines 48-63). Further, as to claim 28, the use of photo-polymerizing resins would require the use of electromagnetic radiation such as those claimed for curing/thickening.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 6, 13-15, and 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernihough et al. (US 6,265,022).

As to claims 6 and 22, Fernihough et al. teaches removing the plug material by burning it out, and then removing residual selective chemical cleaning (col. 6, lines 27-30). Fernihough et al. lacks a teaching of using mechanical removal to remove residual plug material. It is well known in the art that mechanical removal (including water jet machining and ultrasonic cleaning) and chemical removal are alternative and equivalent means for removing a material from a substrate surface in the turbine engine art. It would have been obvious for one having ordinary skill in the art to have substituted

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mechanical removal for chemical removal with the expectation of equivalent results in the absence of a showing of unexpected results.

As to claims 7-10, Fernihough et al. lacks a teaching of adding a material which fluoresces under UV light to its masking material and inspecting the substrate using UV light to locate any unwanted residual masking material. It is well known in the coating art to provide masks with dyes/color in order to locate the masking material. It would have been obvious to one skilled in the art to have added UV fluorescent material to the plug material of Fernihough et al. in order to make location and removal of the material easier.

As to claims 13-15, Fernihough et al. does not disclose applying the plug material in a step-wise fashion. It is well settled that the mere duplication of parts, or the splitting of one step into two, has no patentable significance unless a new and unexpected result is produced. Further, it would have been obvious for one having ordinary skill in the art to have determined the optimum amount of filler in each layer of plug material through routine experimentation in the absence of a showing of criticality.

As to claims 17-21, Fernihough et al. is silent with regard to the amount of fillers or the filler size. One having ordinary skill in the art would have known that the amount and size of filler particles is dependent upon the size of the cooling hole being plugged, on the amount of porosity desired, on the number of different particles being used as fillers, etc. It would have been obvious for an engineer skilled in the art to have selected the optimum amount and sizes of filler particles for use in the plug material considering each of the above factors, through routine experimentation in the absence of a showing of criticality.

As to claim 23, Fernihough et al. does not teach locating the cooling holes using a vision system which directs a CNC machine. However, it is noted that one skilled in the art would have known to use available equipment for locating cooling holes during the removal of residual material in order to facilitate the process of Fernihough et al.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Foster et al. (US 4,726,104) and Venkataramani et al. (US 5,902,647) are cited to illustrate methods for masking/plugging cooling holes in turbine engines to prevent material from various mechanical processes from entering and contaminating the cooling holes.


Updegrove et al. (US 6,107,598) and Foster et al. are cited for their teachings of using mechanical processes to remove their masking materials from the substrate surface.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kirsten C Jolley  
Patent Examiner  
Art Unit 1762

kcj